

# Lean-Green Supply Chain Management

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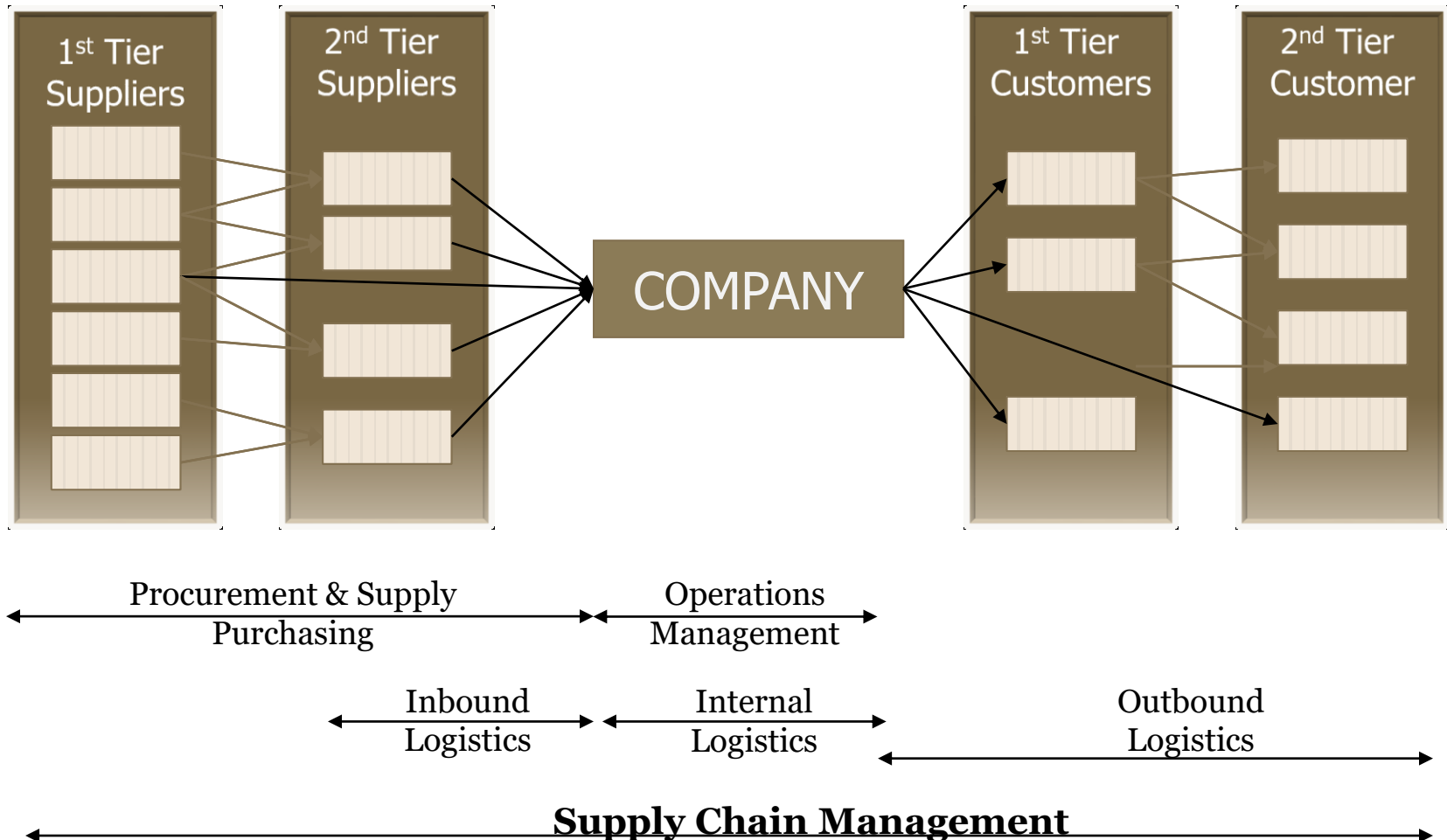
**BA**

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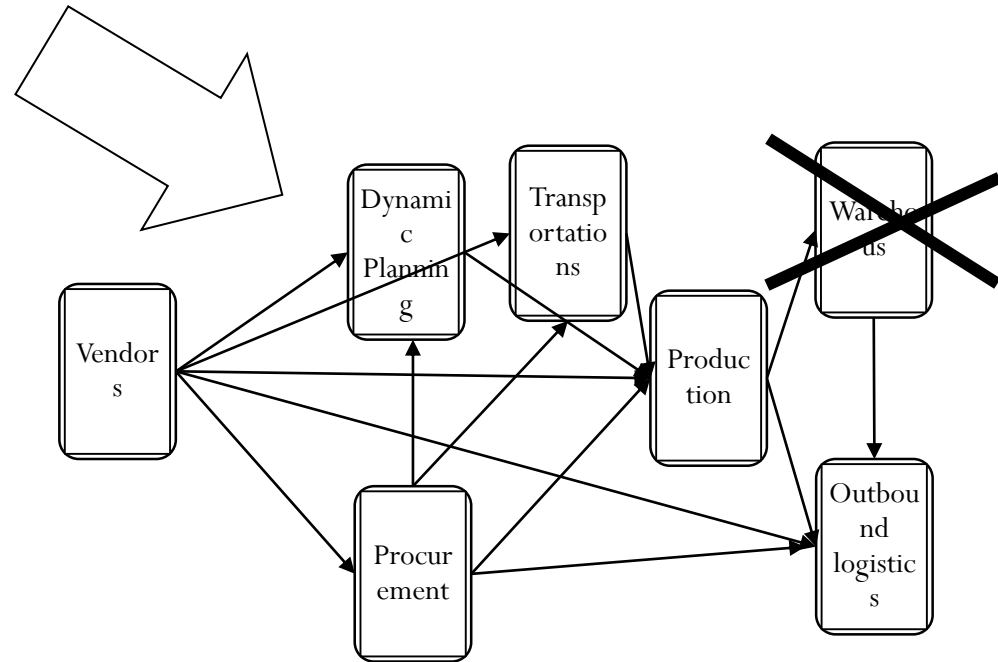
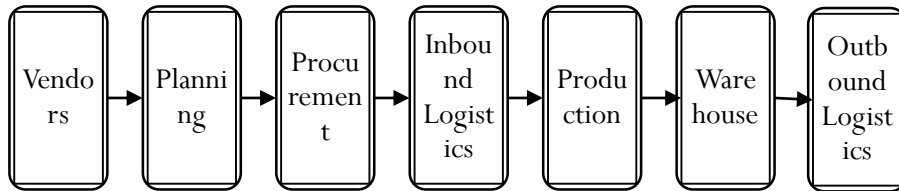
# Agenda

- New types of Supply Chain
- Lean Principles
- Green Supply Chain Management

# Extended or Ultimate Supply Chains



# From the Supply Chain to the Value Network



# **Lean Principles**

# **The Lean Thinking Principles**

**VALUE**

**FLOW OF VALUE**

**FLOW**

**PULL**

**PERFECTION**

# The Fundamental Principles of Lean

- Identify what is value for the customer
- Delete actions that do not produce value (in Japanese *muda*)
- Organize to work in short cycles or, when possible, to *flow*
- Perform the tasks only if necessary, or if requested by the customer internal and / or external (*pull*)
- There is no limit to improvement, we must strive for perfection (*kaizen*)

# Splitting of Value-added Activities

## Work with added value

Activities adding value to the product/service

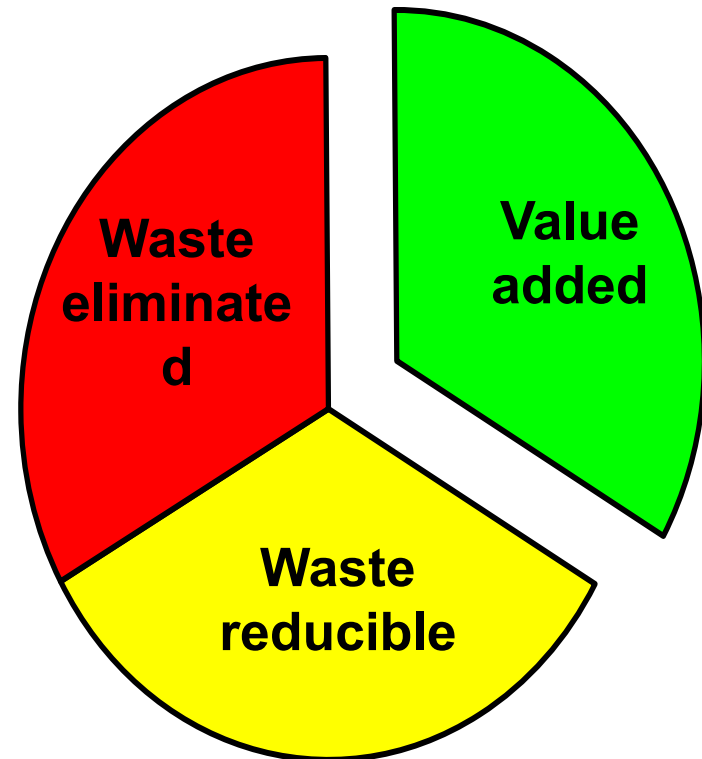
Activities for which the customer is prepared to pay

## Waste to be eliminated

Activities that do not add value, but that can be eliminated

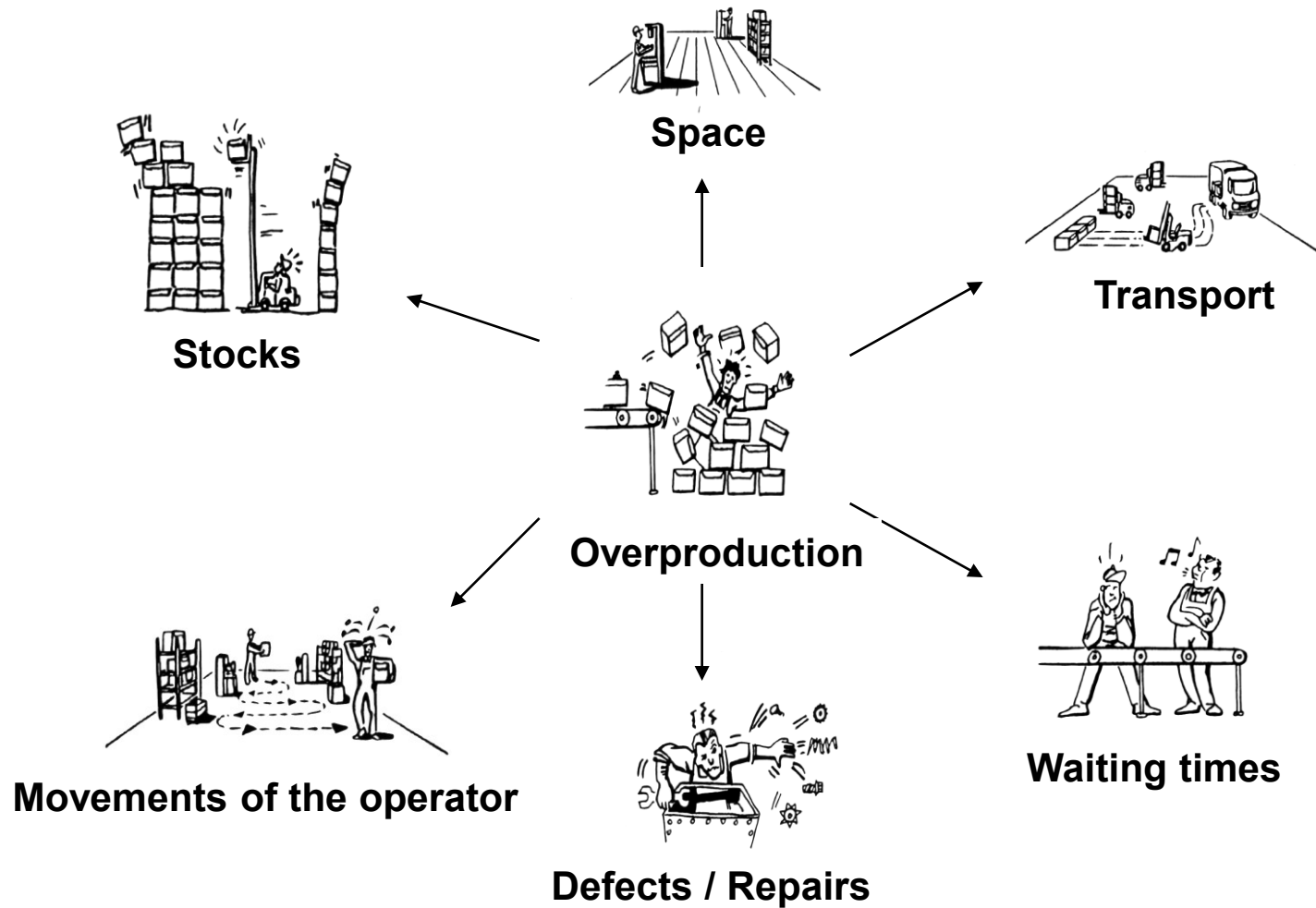
## Waste to be reduced (hidden)

Activities that do not add value, but that in certain circumstances must be carried out





# Possible Types of Waste



# Main Tools of the Lean and Digitize

- **The Visual Approach (Value Stream Mapping)**
- **The Five Why**
- **5S**
- Management of documentation and standard
- Rules of "good performance"
- Techniques for the rationalization of product planning and modular range

# Continuous Improvement: DMAIC

## Define

Define the problem, define objectives, define the working group

## Measure

Define measures of system performance

## Analyze

Analyze the current situation (*As-Is*)

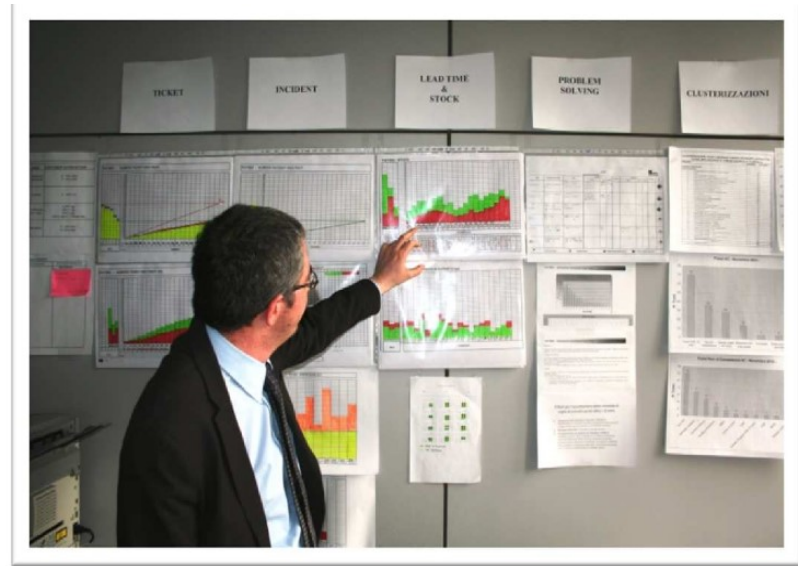
## Improve the processes

Define an improved process (*To-Be*) And improve operationally

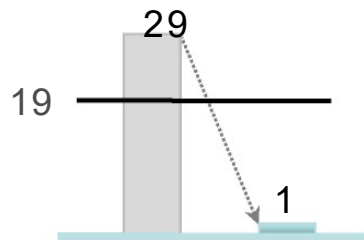
## Check

Re-measure the KPI and see if they have improved

# DMAIC: An Example in a Bank

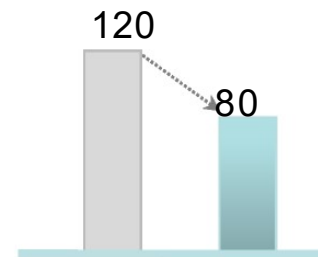


## Corrections Support



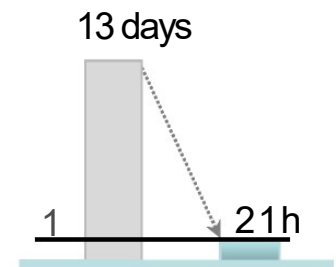
### Volumes

#tickets per month



### Volume

#tickets per month



**Lead time**  
Average

# **Green Supply Chain Management**

# Green Supply Chain Management

“Integrating environment thinking into supply chain management, including product design, material sourcing and selection, manufacturing processes, delivery of the final product to the consumers, and end-of-life management of the product after its useful life”.

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# **Sustainability vs. “Green”**

World Business Council for Sustainable Development:

## *Sustainability*

*Meeting the needs of the present without compromising the ability of future generations to meet their own needs*

Green has a primary focus on the environment

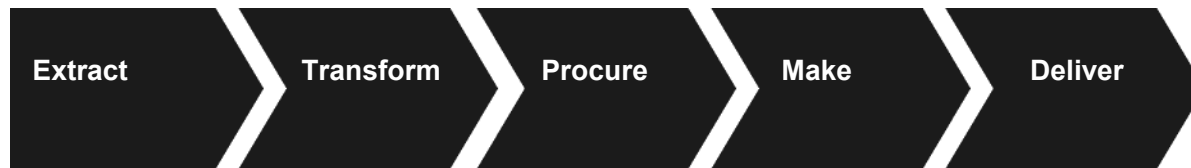
Sustainable includes environment + social

# **Supply Chain Processes**



# “Traditional” Supply Chain Management (SCM)

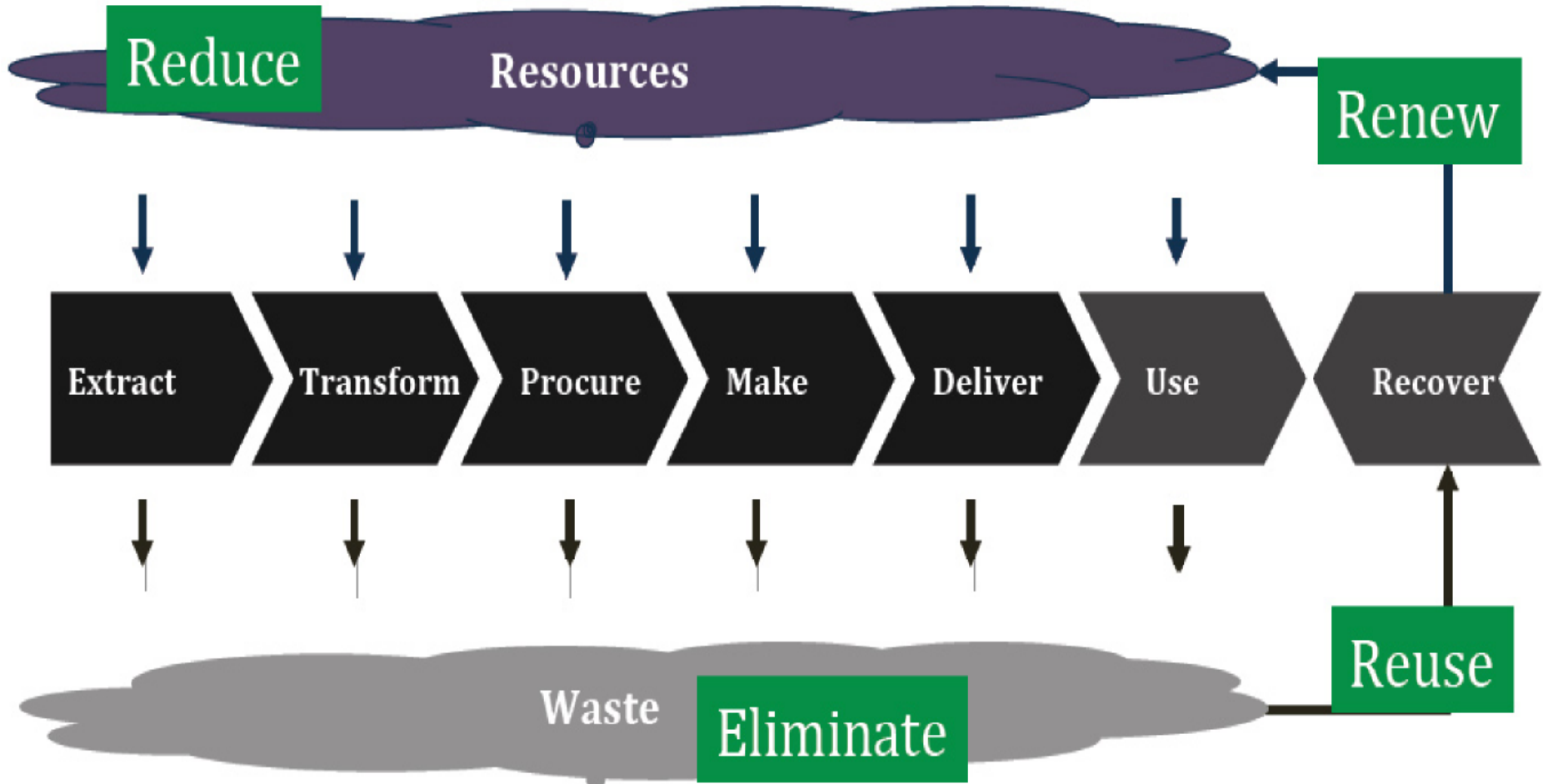
All parties involved, directly or indirectly, in fulfilling a customer request



Source of competitive advantage

- Innovative business models
- Value creation
- Efficiency

# Green SCM in one slide



# What is green supply chain management?

It can include

- Reduction of energy use & renewable alternatives
- Cutting water volumes & countering contamination
- Reducing, scrubbing or sequestering GHGs
- Decreasing quantities of waste
- Recycling
- Packaging material reductions
- Reverse logistics

# **Why there is the Need for Green SCM?**

Increasing Environmental Constraints due to Global Warming

Corporate Social Responsibility

Beneficial for Organization

Eco-friendly

Increasing Environmental awareness in stakeholders

Evolving Consumer and Client Demand

Response to increasing fuel prices

# Improvements By Green SCM

Improves operations by employing an environmental solution

Improves Agility: Green supply chain management helps:

- Mitigate risks and speed innovations
- Increases Adaptability: Green supply chain analysis often leads to innovative processes and continuous improvements
- Promotes Alignment: involves negotiating policies with vendors and customers, which results in better alignment of business processes and principles.

# **Areas to Green the Supply Chain**

Design

Procure

Make

Packaging

Warehousing

Deliver

Reverse Logistics

# Design

An eco friendly design approach leads

- Minimum Operations
- Less material usage
- Proper use of Computational fluid dynamics tools can used to reduce the exhaust emissions at designing level

# **Procure**

Implementing Green purchasing policies

Technical support to vendors to reduce the emissions

Guidelines for usage of less hazardous materials



# **Make**

Achieving Economies of scale in production

Lean manufacturing approach

Fuel efficient tools and machines

Selecting less carbon intensive energy sources

# Packaging

Mercury free

Non toxic (minimize toxicity)

PVC or DEHP free

Recyclability

Hazardous waste considerations

Durability/Reusability

Energy efficient



# **Deliver**

Optimized Truck loads

Direct shipment to the customer (Dell model)

Routing of distribution

Reverse Logistics

## **Other Initiatives**

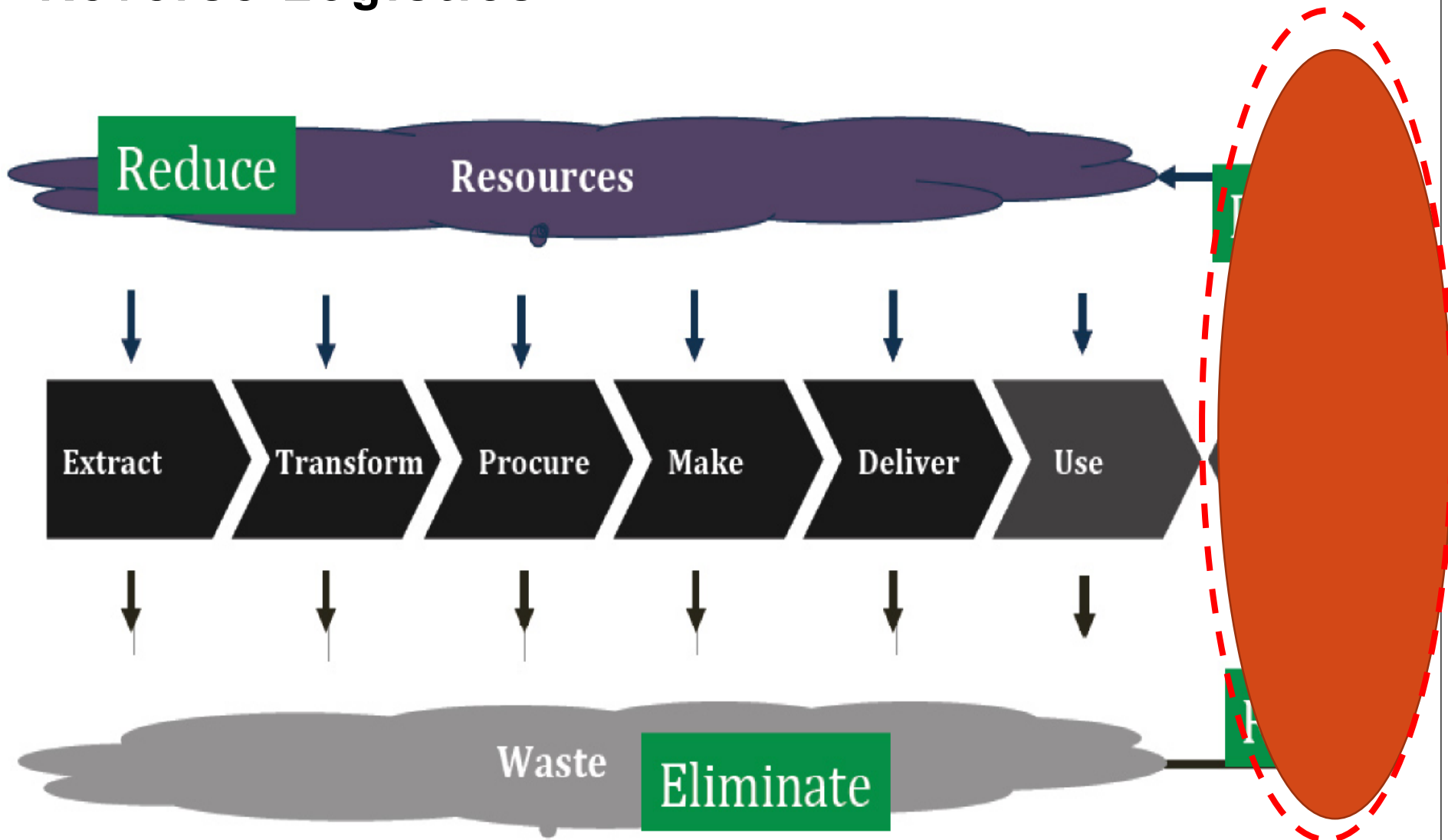
Eco labeling: Labeling that identifies products that meet certain environmental criteria

LEED (Leadership in Energy and Environmental Design): Design and Construction practices that significantly reduces or eliminate negative impact of building on environment

Green sourcing: Sustainable procurement

# **Reverse Logistics**

# Reverse Logistics



## **Definition of Reverse Logistics**

“The process of planning, implementing, and controlling the efficient, cost effective flow of raw materials, in--process inventory, finished goods, and related information from the point of consumption to the point of origin for the purpose of recapturing or creating value or proper disposal”

Rogers and Tibben-Lembke (1999)



**Think about the reverse logistics of these five products**



# Success Stories

**Texas Instruments:** saves 8 million dollars every year by reducing its transit packaging budget for its semiconductor business through source reduction recycling and use of reusable packaging systems.

**Commonwealth Edison:** Produced \$50 million in financial benefits from managing materials and equipments with Life Cycle Management Approach.

**Pepsi/Coke:** Saved \$44 million by switching from corrugated to reusable plastic shipping containers for 1 litre and 20 ounce bottles ,conserving 196 million pounds of corrugated material.

**Dow Corning:** Saved \$2.3 million by using reconditioned steel drums in 1995.Also conserved 7.8 million pounds of steels.

# **Intention to become “Carbon Neutral”**

Blackwell Publishing

Dell

DHL

TESCO

Travelocity

Marks and Spencer

And so on

# Summary

- Lean-green supply chains concentrates on **economic** aspect, while sustainability includes also **environmental** and **social** aspects
- Lean green supply chain can be seen as **costs** or **opportunities**
- Green attention will continue to **increase** in business
- Supply chain professionals have **unique position** to improve lean-green supply chain performance

## After the Lean

- Lean – Reduce waste
- Lean & Digitize – Combine with IT
- The real objective: to become more Agile – Agile Enterprise