GreenSCORing the Supply Chain

**Creating Sustainable Supply Chains with the SCOR Model**
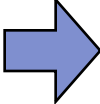
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THE OPPORTUNITY TO MAKE A DIFFERENCE HAS NEVER BEEN GREATER

The GreenSCOR framework for Green SCM drives faster, more robust analysis.

Green SCM integrates environmental and supply chain management. GreenSCOR provides the framework for Green SCM analysis.

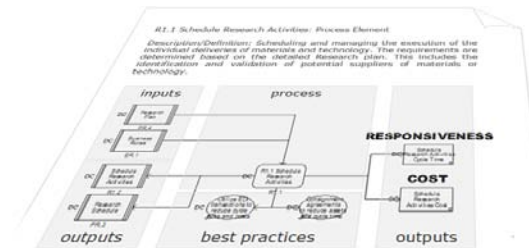**Environmental Management**

GreenSCOR

Supply Chain Management
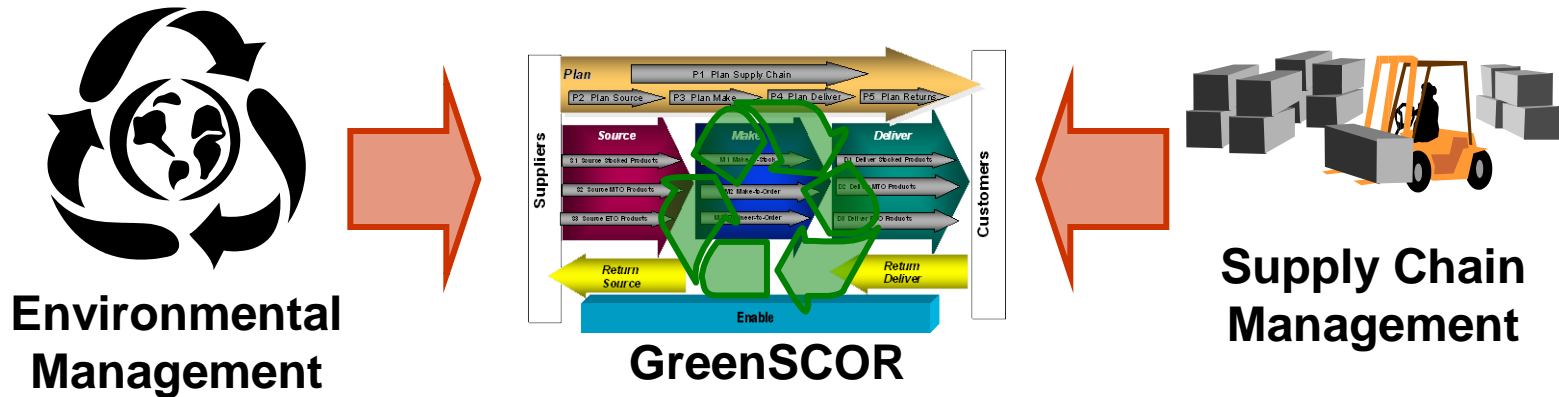
Green SCM recognizes the disproportionate environmental impact of supply chain processes in an organization.

- **Introduction to GreenSCOR**
- **Applying GreenSCOR**
- **The GreenSCOR Value**

SCOR is a framework for supply chain processes, performance, and practices.

- **Process frameworks deliver the well-known concepts of business process reengineering, benchmarking, and best practices into a cross-functional framework**

  - **Standard processes:
    Plan, Source, Make, Deliver, Return, Enable**

  - **Standard metrics:
    Perfect Delivery, Cash Cycle Time, Supply-Chain Cost, etc**

  - **Standard practices
    SCRM, EDI, CPFR, Cross-Training, etc**

- **Pre-defined relationships between processes, metrics and practices**
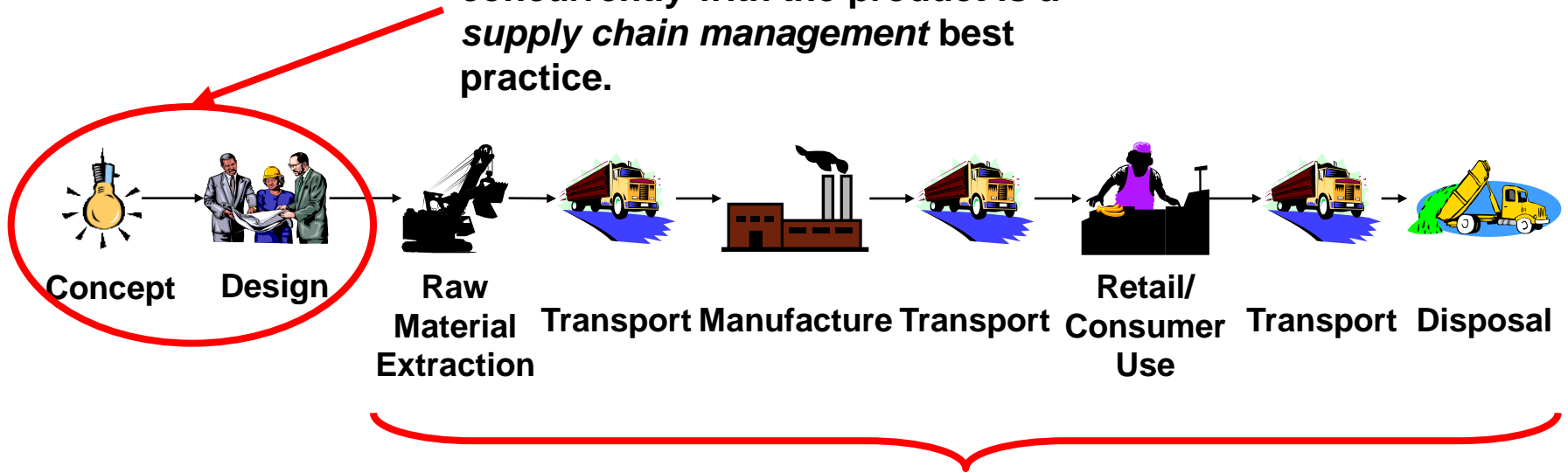
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SCOR views the supply chain as built up of five distinct management processes.
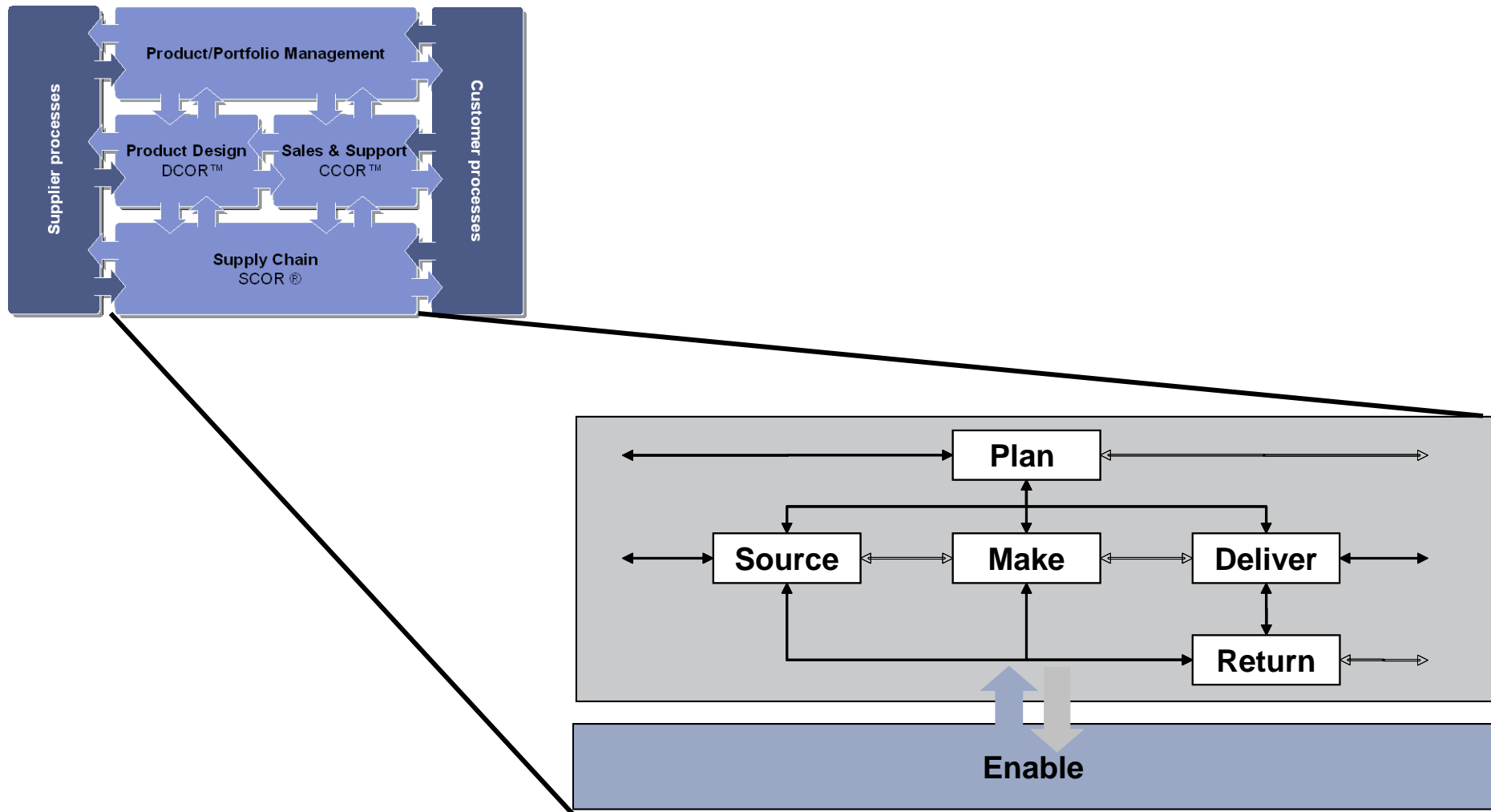
The product life cycle is the basis of green supply chain management.

Supply Chain in the Environmental Life Cycle

Designing the supply chain concurrently with the product is a *supply chain management* best practice.

Concept → Design → Raw Material Extraction → Transport → Manufacture → Transport → Retail/Consumer Use → Transport → Disposal

Typical Supply Chain Scope

GreenSCOR focuses on SCM impacts in each stage of the product life cycle.

GreenSCOR Concept

LCA Stage

Raw Material Extraction   Manufacture   Retail/ Consumer Use   Disposal

GreenSCOR Mapping
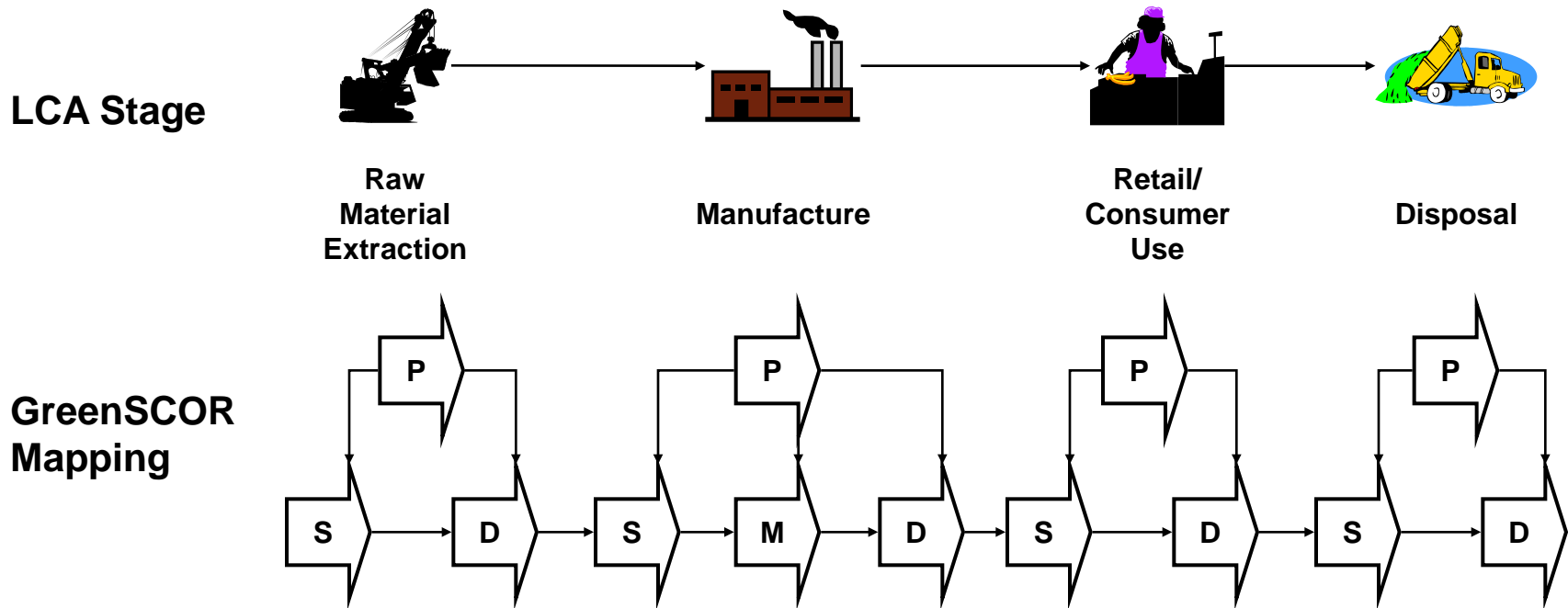
- **Introduction to GreenSCOR**
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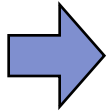
GreenSCOR adds Best Practices, Metrics, and Processes to SCOR.

- **Best Practices to green the supply chain (examples)**
  - **Collaborate with partners on environmental issues**
  - **Minimize fuel/energy consumption**
  - **Minimize and reuse packaging materials**

- **Metrics to measure the effects of greening (examples)**
  - **Carbon and Environmental Footprint**
  - **Energy Costs**
  - **Units per Shipment**

- **Processes to capture waste management**
  - **M1.7, M2.7, M3.8—Waste Disposal**

Supply chain mapping with GreenSCOR uses standard SCOR practices.

SCOR Supply Chain Mapping

Level 2

Tier 3   Tier 2   Tier 1   Your Company   Customer

D1 | S1 | M1 | D1 | S1 | M1 | D1 | S1 | M2 | D2 | S2

Level 3

M2.1	M2.2	M2.3	M2.4	M2.5	M2.6
Schedule production Activities	Issue Product	Produce and Test	Package	Stage Product	Release Product to Deliver
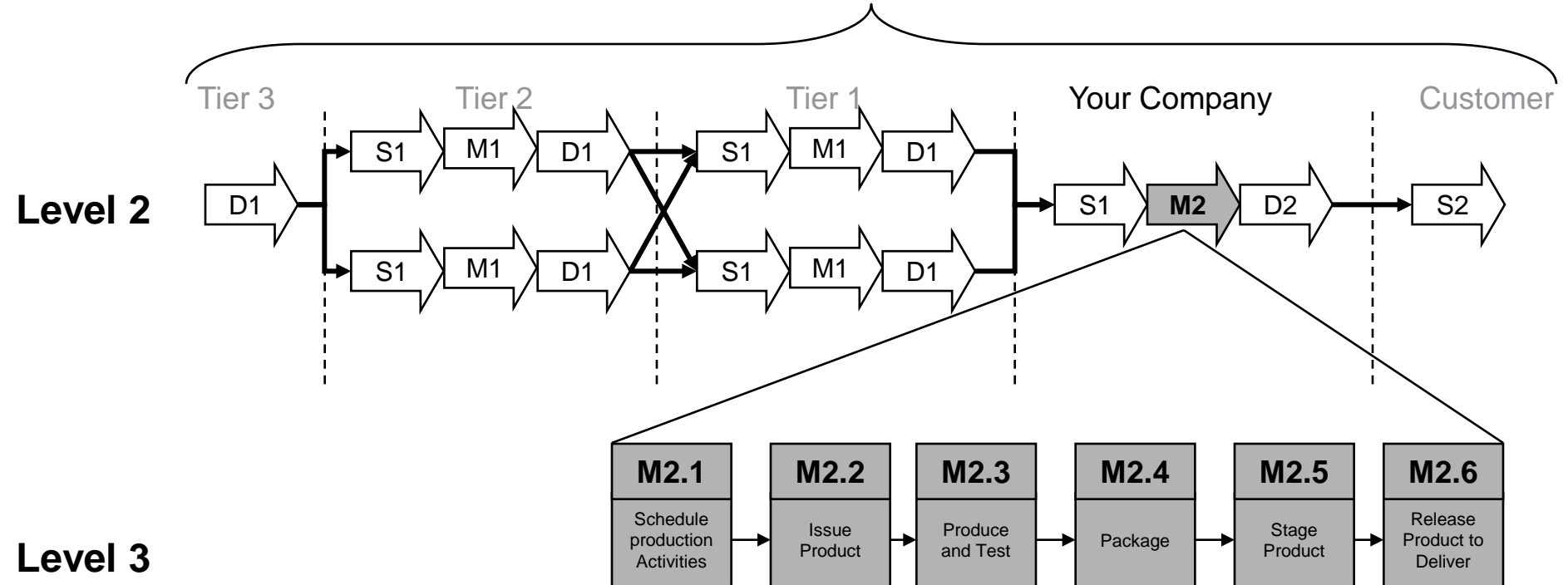
Five metrics repeated at all three SCOR levels measure environmental footprint.

Environmental Footprint Metrics

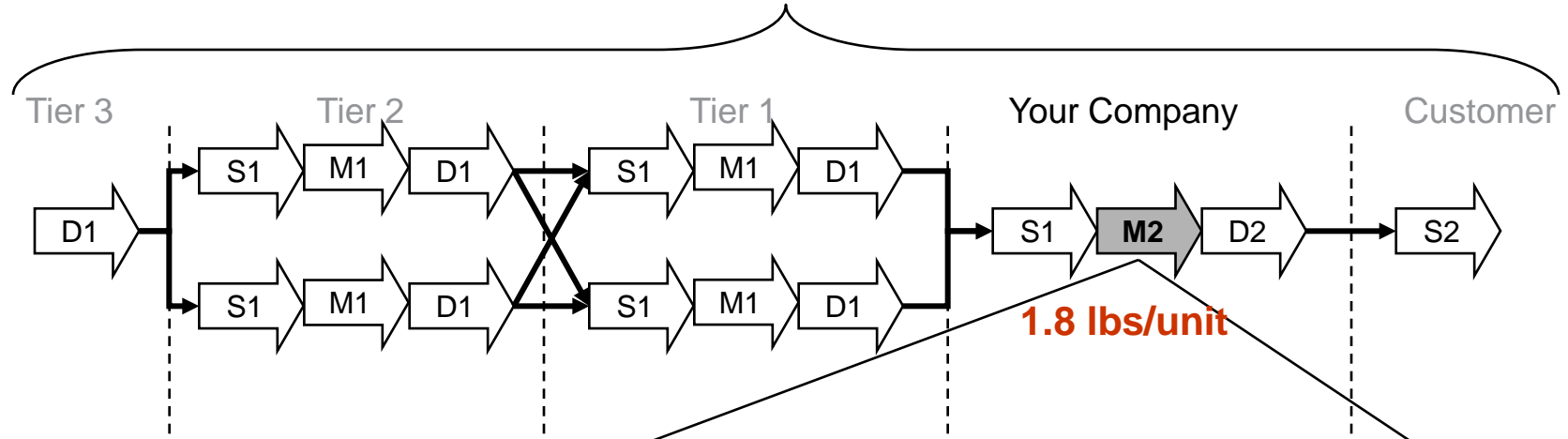| Metric	Units	Basis
Carbon Emissions	Tons CO_2 Equivalent	This is the unit of measure currently used for green house gas emissions and is a measure of the climate impact from CO_2 and other global warming air emissions.
Air Pollutant Emissions	Tons or kg	This would include emissions of major air pollutants (COx, NOx, SOx, Volatile Organics (VOC) and Particulate). These are the major emissions that EPA tracks.
Liquid Waste Generated	Tons or kg	This includes liquid waste that is either disposed of or released to open water or sewer systems (these emissions are generally listed on water emissions permits).
Solid Waste Generated	Tons or kg	The total solid waste generated by the process.
% Recycled waste	Per cent	The per cent of the solid and liquid waste that is recycled.

Footprint metrics provide a strategic view of environmental performance.
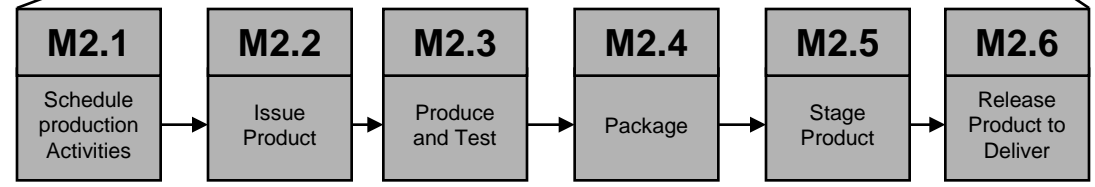
SCOR Environmental Footprint Hierarchy

Level 1

Total Carbon Footprint=8.9 lbs/unit

Level 2

Tier 3   Tier 2   Tier 1   Your Company   Customer

D1

S1 M1 D1   S1 M1 D1
S1 M1 D1   S1 M1 D1

S1   **M2**   D2   S2

1.8 lbs/unit

Level 3

M2.1	M2.2	M2.3	M2.4	M2.5	M2.6
Schedule production Activities	Issue Product	Produce and Test	Package	Stage Product	Release Product to Deliver

0.9 lbs/unit

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GreenSCOR best practices support overall performance improvement.

Example Environmental Best Practices

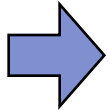| Plan	• Supply Chain partners collaborate on environmental issues • Plans created to minimize energy use
Source	• Select vendors with EMS system in place • Establish environmental partnerships with suppliers
Make	• Schedule peak production for of-peak energy demand times • Minimize packaging material
Deliver	• Route to minimize fuel consumption • Retrieve packaging material for re-use
Return	• Do not physically return product beyond economic repair • Take back product for recycling
Enable	• Implement an EMS and track environmental performance • Maintain equipment for fuel/energy efficiency

EMS=Environmental Management System

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GreenSCOR builds on SCOR's standard, proven metrics for SCM.

GreenSCOR metrics are integrated into the SCOR performance management attributes.

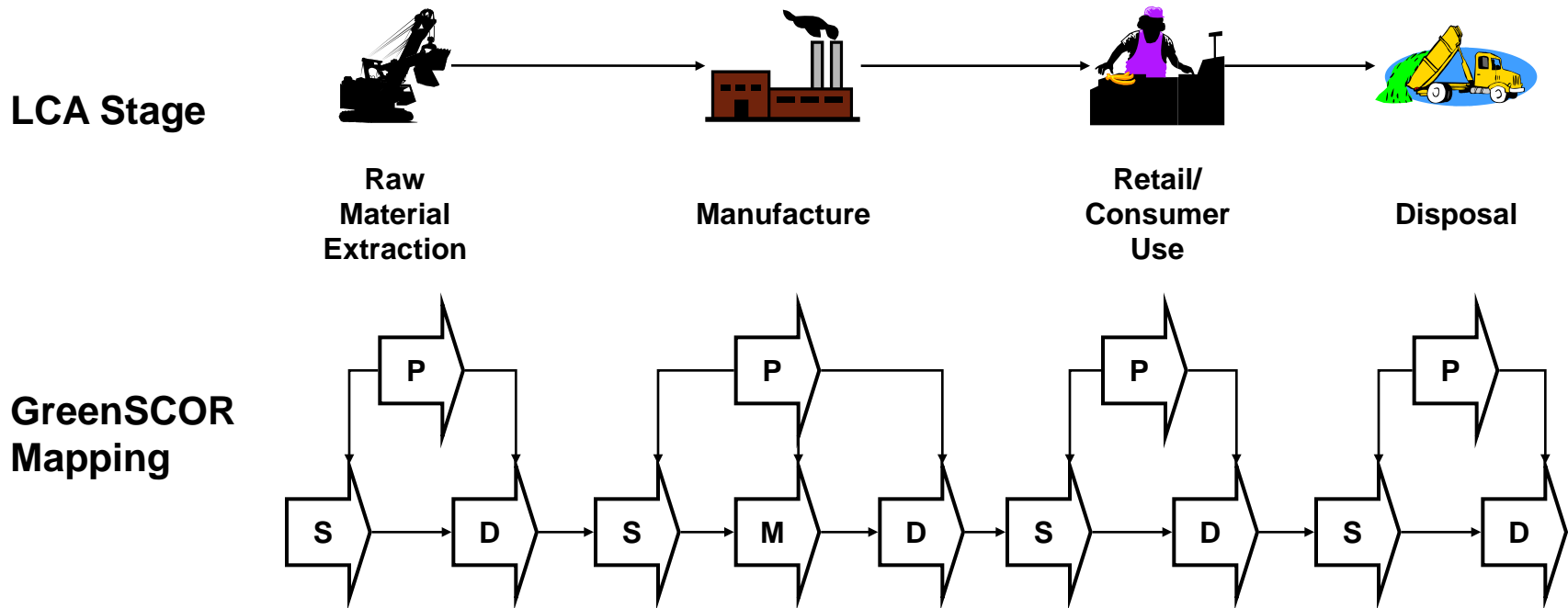|	Attribute	Strategic metric
Customer	Reliability	Perfect Order Fulfillment
	Responsiveness	Order Fulfillment Cycle Time
	Agility	Supply Chain Flexibility
		Supply Chain Upside/Downside Adaptability
Internal	Cost	Supply Chain Management Cost
		Cost of Goods Sold
	Assets	Cash-to-Cash Cycle Time
		Return on Supply Chain Fixed Assets
		Return on Working Capital

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- **The GreenSCOR Value**

GreenSCOR provides an integrated approach for green SCM.

GreenSCOR Concept

LCA Stage

Raw Material Extraction   Manufacture   Retail/ Consumer Use   Disposal

GreenSCOR Mapping

GreenSCOR builds upon proven environmental and SCM concepts.

- **SCOR is a widely used SCM framework**
  - **International acceptance**
  - **Cross-industry use**
- **LCA is the preferred approach for environmental management**
  - **ISO 14044**
  - **PAS 2050**

GreenSCOR provides a standard, repeatable process

- **GreenSCOR provides a standard language for communication and collaboration.**
  - **Cross-company communication a significant barrier to green SCM implementation.**
- **GreenSCOR support repeatable analysis.**
  - **Analytical approach and lessons learned easily applied across multiple supply chains.**

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